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| EXAMINER |
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KHAN, SUHAIL

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| ART UNIT | PAPER NUMBER |
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2686

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/661,670 | Applicant(s) BEJERANO ET AL. | |
| | Examiner Suhail Khan | Art Unit 2686 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>12/8/2003</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1 and 11-22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims **1 and 11-22** are drawn to a “program” *per se* as recited in the preamble and as such is non-statutory subject matter. See MPEP § 2106.IV.B.1.a. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical “things.” They are neither computer components nor statutory processes, as they are not

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“acts” being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3-4, 7, 9, 11-12, 14-15, 18, 20 and 22 rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent App. Pub. No. 2003/0143999 to Funato et al.

Referring to **claim 1**, Funato et al disclose a method for grouping cells (page 4, paragraph 59, paging area clustering; page 10, paragraph 125, cells in paging area) comprising: generating a linear program (page 3, paragraph 46, paging area configuration algorithm) representing a sum of weighted values associated with each cell and each edge between adjacent cells (page 11, paragraph 138 shows the total paging cost being calculated as the sum of paging cost for area i and paging cost for area j; area i is interpreted as being the paging area encompassing each cell and area j is interpreted as being the paging area encompassing each edge; values alpha and beta are used for the individual cost calculation for each area i and j making these costs weighted; this weighted value carries over for the total paging cost as the individual weighted costs are

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added, resulting in a total weighted cost) and grouping constraints (page 3, paragraph 46, paging area configuration must minimize the overall network location updating and paging cost thus entailing constraints); and assigning a cell to a group based on solutions of the linear program (page 4, paragraph 59, paging area clustering; page 10, paragraph 125, cells in paging area; paging area is set based on clustering algorithm).

Referring to **claim 3**, Funato et al disclose the method of claim 1 wherein each cell comprises a wireless cell (page 10, paragraph 125, cells in paging area; page 2, paragraph 34, wireless communication).

Referring to **claim 4**, Funato et al disclose the method of claim 1 wherein the weighted values associated with each cell represent a paging cost (page 11, paragraph 138 shows values alpha and beta being used for the individual cost calculation for paging area i, making paging cost for area i a weighted value; area i is interpreted as being the paging area encompassing each cell) and the weighted values associated with each edge between adjacent cells represent an updating cost (page 11, paragraph 138 shows values alpha and beta being used for the individual cost calculation for paging areas i and j, making paging costs for these areas weighted values; the total paging cost being calculated as the sum of paging cost for area i and paging cost for area j is thus a weighted value, if paging areas i and j are interpreted as being the paging areas encompassing each edge, the sum of the cost of these areas thus represents weighted values representing an updating cost as the total cost gets updated as the mobile host location changes).

Referring to **claims 7 and 18**, Funato et al disclose the grouping method (page 4, paragraph 59, paging area clustering) and programmed device (page 5, paragraph 64,

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implemented as software processes controlling operation in mobile host) as in claims 1 and 12 wherein the linear program (page 3, paragraph 46, paging area configuration algorithm) comprises a variable, where the variable equals: a first value, if elements i and j belong to different groups, or a second value, if i and j belong to the same group (page 11, paragraph 138 shows the total paging cost being calculated as the sum of paging cost for area i and paging cost for area j, this cost varies as individual areas i and j vary hence being variable; if areas i and j encompass a given area, the cost differs for one given area for i and j and another given area for i and j hence generating a first value and a second value).

Referring to **claim 9**, Funato et al disclose the method as in claim 1 wherein the group comprises a location area associated with one or more wireless networks (page 10, paragraph 125, cells in paging area; page 2, paragraph 34, radio communication network).

Referring to **claim 11**, Funato et al disclose a method for grouping cells in a line (page 3, paragraph 46, paging area configuration algorithm; figure 7, linearly arranged paging areas) comprising: generating a dynamic program (page 3, paragraph 46, algorithm) representing a sum of weighted values associated with each cell and each edge between adjacent cells (page 11, paragraph 138 shows the total paging cost being calculated as the sum of paging cost for area i and paging cost for area j; area i is interpreted as being the paging area encompassing each cell and area j is interpreted as being the paging area encompassing each edge; values alpha and beta are used for the individual cost calculation for each area i and j making these costs weighted; this weighted value carries over for the total paging cost as the individual weighted costs are

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added, resulting in a total weighted cost) and grouping constraints (page 3, paragraph 46, paging area configuration must minimize the overall network location updating and paging cost thus entailing constraints); and assigning a cell to a group based on solutions of the dynamic program (page 4, paragraph 59, paging area clustering; page 10, paragraph 125, cells in paging area; paging area is set based on clustering algorithm).

Referring to **claim 12**, Funato et al disclose a programmed device (page 5, paragraph 64, implemented as software processes controlling operation in mobile host) for grouping cells (page 3, paragraph 46, paging area configuration algorithm; page 10, paragraph 125, cells in paging area) operable to: generate a linear program (page 3, paragraph 46, paging area configuration algorithm) representing a sum of weighted values associated with each cell and each edge between adjacent cells (page 11, paragraph 138 shows the total paging cost being calculated as the sum of paging cost for area i and paging cost for area j; area i is interpreted as being the paging area encompassing each cell and area j is interpreted as being the paging area encompassing each edge; values alpha and beta are used for the individual cost calculation for each area i and j making these costs weighted; this weighted value carries over for the total paging cost as the individual weighted costs are added, resulting in a total weighted cost) and grouping constraints (page 3, paragraph 46, paging area configuration must minimize the overall network location updating and paging cost thus entailing constraints); and assign a cell to a group based on solutions of the linear program (page 4, paragraph 59, paging area clustering; page 10, paragraph 125, cells in paging area; paging area is set based on clustering algorithm).

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Referring to **claim 14**, Funato et al disclose the programmed device of claim 12 wherein each cell comprises a wireless cell (page 10, paragraph 125, cells in paging area; page 2, paragraph 34, wireless communication).

Referring to **claim 15**, Funato et al disclose the programmed device of claim 12 wherein the weighted values associated with each cell represent a paging cost (page 11, paragraph 138 shows values alpha and beta being used for the individual cost calculation for paging area i, making paging cost for area i a weighted value; area i is interpreted as being the paging area encompassing each cell) and the weighted values associated with each edge between adjacent cells represent an updating cost (page 11, paragraph 138 shows values alpha and beta being used for the individual cost calculation for paging areas i and j, making paging costs for these areas weighted values; the total paging cost being calculated as the sum of paging cost for area i and paging cost for area j is thus a weighted value, if paging areas i and j are interpreted as being the paging areas encompassing each edge, the sum of the cost of these areas thus represents weighted values representing an updating cost as the total cost gets updated as the mobile host location changes).

Referring to **claim 20**, Funato et al disclose the programmed device as in claim 12 wherein the group comprises a location area associated with one or more wireless networks (page 10, paragraph 125, cells in paging area; page 2, paragraph 34, radio communication network).

Referring to **claim 22**, Funato et al disclose a programmed device for grouping cells in a line (page 3, paragraph 46, paging area configuration algorithm; figure 7, linearly arranged paging areas) operable to: generate a dynamic program (page 3,

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paragraph 46, algorithm) representing a sum of weighted values associated with each cell and each edge between adjacent cells (page 11, paragraph 138 shows the total paging cost being calculated as the sum of paging cost for area i and paging cost for area j; area i is interpreted as being the paging area encompassing each cell and area j is interpreted as being the paging area encompassing each edge; values alpha and beta are used for the individual cost calculation for each area i and j making these costs weighted; this weighted value carries over for the total paging cost as the individual weighted costs are added, resulting in a total weighted cost) and grouping constraints (page 3, paragraph 46, paging area configuration must minimize the overall network location updating and paging cost thus entailing constraints); and assign a cell to a group based on solutions of the dynamic program (page 4, paragraph 59, paging area clustering; page 10, paragraph 125, cells in paging area; paging area is set based on clustering algorithm).

5. Claims 2, 5-6, 10, 13, 16-17, 21 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent App. Pub. No. 2003/0143999 to Funato et al, further in view of Official Notice (MPEP 2144.03)

Referring to **claims 2 and 13**, Funato et al disclose the grouping method (page 4, paragraph 59, paging area clustering) and programmed device (page 5, paragraph 64, implemented as software processes controlling operation in mobile host) as in claims 1 and 12 respectively. Funato et al do not disclose that the solutions comprise fractional values.

Nonetheless, the Examiner takes official notice of the fact that it is notoriously well known to one of ordinary skill in the art that solutions comprise fractional values.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Funato et al to show the grouping method and programmed device comprising solutions comprising fractional values, the motivation being generating the most accurate values.

Referring to **claims 5 and 16**, Funato et al disclose the grouping method (page 4, paragraph 59, paging area clustering) and programmed device (page 5, paragraph 64, implemented as software processes controlling operation in mobile host) of claims 2 and 13. Funato et al do not disclose rounding the fractional values into integer values.

Nonetheless, the Examiner takes official notice of the fact that it is notoriously well known to one of ordinary skill in the art to round fractional values into integer values.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Funato et al to show the grouping method and programmed device comprising rounding the fractional values into integer values, the motivation being making it easier to interpret results.

Referring to **claims 6 and 17**, Funato et al disclose the grouping method (page 4, paragraph 59, paging area clustering) and programmed device (page 5, paragraph 64, implemented as software processes controlling operation in mobile host) as in claims 5 and 16. Funato et al do not disclose rounding the fractional values using region growing.

Nonetheless, the Examiner takes official notice of the fact that it is notoriously well known to one of ordinary skill in the art to round the fractional values using region growing.

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Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Funato et al to show the method and programmed device further comprising rounding the fractional values using region growing, the motivation being generating the most accurate values.

Referring to **claims 10 and 21**, Funato et al disclose the grouping method (page 4, paragraph 59, paging area clustering) and programmed device (page 5, paragraph 64, implemented as software processes controlling operation in mobile host) as in claims 5 and 12 further comprising approximating costs associated with updating and paging operations (page 3, paragraph 46, updating and paging cost) of one or more wireless networks (page 2, paragraph 34, radio communication network). Funato et al do not disclosing approximating costs from the rounded values.

Nonetheless, the Examiner takes official notice of the fact that it is notoriously well known to one of ordinary skill in the art to round values.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Funato et al to show the method and programmed device comprising approximating costs associated with updating and paging operations of one or more wireless networks from the rounded values, the motivation being making it easier to interpret results.

6. Claims 8 and 19 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent App. Pub. No. 2003/0143999 to Funato et al.

Referring to **claims 8 and 19**, Funato et al disclose the grouping method (page 4, paragraph 59, paging area clustering) and programmed device (page 5, paragraph 64, implemented as software processes controlling operation in mobile host) as in claims 7

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and 14. Funato et al do not disclose expressly that the first value equals 1 and the second value equals 0.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to show that the first value equals 1 and the second value equals 0. Applicant has not disclosed that the first value equals 1 and the second value equals 0, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with generating variables as shown in Funato et al. page 11, paragraph 138 because cell grouping can be performed based on the results of the algorithm in Funato et al.

Therefore, it would have been obvious to one of ordinary skill in this art to modify Funato et al. to obtain the invention as specified in claims 8 and 19.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to cell grouping.

U.S. Pat. No. 5943621 to Ho et al.

U.S. Pat. No. 5390234 to Bar-Noy et al.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suhail Khan whose telephone number is (571) 272-7910. The examiner can normally be reached on M-F from 8 am to 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold, can be reached at (571) 272-7905.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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